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ORIGINAL ARTICLE

**ANALYZING MENTAL HEALTH DISORDER RATES AMONG PRIVATE SECTOR MEDICAL STUDENTS: TACKLING GENDER DISPARITIES.**

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ABSTRACT

BACKGROUND: This study investigates the frequency of Mental Health Disorders among students at Private sector medical college and university with a specific focus on the mental health challenges faced by undergraduate students. **OBJECTIVE:** This study aims to explore the prevalence of these mental health disorders between university students and to identify key risk factors, providing insights for targeted interventions to support student well-being.

METHODOLOGY: A total of 247 students (166 females and 81 male) from different programs, including MBBS (132 participants), BDS (44 participants), and other medical disciplines (71 participants), participated in this cross-sectional study. Random sampling was used to choose participants according to their educational attainment, gender, and field of study. Students who had used on-campus wellness and counseling services met the inclusion criterion, whereas those who had never used these services were not included. This study employed six established instruments to evaluate mental health conditions, including the GAD-7 (generalized anxiety disorder-7) to screen for generalized anxiety disorder, the PHQ-9 (patient health questionnaire-9) to gauge the severity of depression, and the PHQ-15 to measure somatic symptoms. Obsessive-compulsive disorder symptoms were evaluated using the OCI-R (obsessive-compulsive inventory-revised). SPIN was used for social anxiety, and the severity measures for specific phobia and panic disorder, both showing strong validity and reliability. The DAST-10 (drug abuse screening test) was used to assess substance use.

RESULTS: Results indicated a high prevalence of mental health disorders: 58.9% for somatic symptom disorder, 39.9% for depression, 22.3% for generalized anxiety disorder, and 48% for obsessive-compulsive disorder and 4.1% in substance-use disorder. Notably, female students exhibited significantly higher scores in depression and anxiety disorders compared to their male counterparts. Significant comorbidities were observed, with depression frequently co-occurring with somatic symptom disorder and anxiety disorders. **CONCLUSION:** Enhancing mental health resources and support systems within university settings is crucial to promote student well-being and academic success. Further research is recommended to explore the underlying causes of these gender disparities in mental health.

KEYWORDS: Mental health disorders, Undergraduate students, Prevalence, Gender disparities, University wellness services

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INTRODUCTION

The adaptation from adolescence to adulthood is an integral period, particularly for university students, as they face emotional and intellectual demands that can significantly impact their well-being.¹ This stage of life introduces numerous disputes—such as living far from home, forming new friendship, and adjusting to different academic expectations—that can lead to emotional, social, and physical difficulties.² Research indicates increased frequency of anxiety disorders among female university students, with many reporting symptoms of depression, anxiety, and stress that negatively affect their academic performance and overall mental health.³ Mental health disorders, including depression and anxiety, are particularly concerning, affecting 20% to 48% of university students—significantly higher than the general population rates of 22-25%.⁴ The world health organization (WHO) identifies mental health disorders as a leading cause of disability worldwide, especially among individuals aged 15 to 44.⁵ The unique pressures of university life make students vulnerable to various psychosocial factors that contribute to anxiety and depression.³⁻⁵

Anxiety disorders consist of generalized anxiety disorder (GAD) and social anxiety disorder (SAD), are prevalent among students, with rates varying widely across different populations.⁶ Similarly, other mental health issues such as panic disorder and obsessive-compulsive disorder (OCD) significantly impact students' academic and social functioning. The co-occurrence

of these disorders with substance use issues further complicates their mental health landscape, highlighting an urgent need for accessible counseling services.⁷⁻⁸

This study aims to explore the prevalence of these mental health disorders between university students and to identify key risk factors, providing insights for targeted interventions to support student well-being.

METHODOLOGY

This cross-sectional study was carried out in Aug - Oct 2024 at a private sector of Punjab using six validated questionnaires to determine the prevalence of mental health disorders among the students of medical college and allied health department from university. The approval for this study was obtained from the institutional review board with ref no: IRB/2024/165. Cross-sections of the population based on different genders, fields of study, and educational levels were included. Random sampling strategy was used to determine the sample size. After additional divisions, the determined total sample size was 247, of which 132 participants were from MBBS, 44 from BDS, and 71 from private medical college and allied health sciences department from university (Figure 1).

The age of the participants ranged between 18-25 years. 166 female and 81 male students were included in this study (Figure 2) Students of all socioeconomic classes, ethnicities, backgrounds are included in sample. These students were identified from counselling and wellness center. Students who never availed the on-campus counselling facility were not included in the study.

Figure 1. Sample distribution among students of a private sector

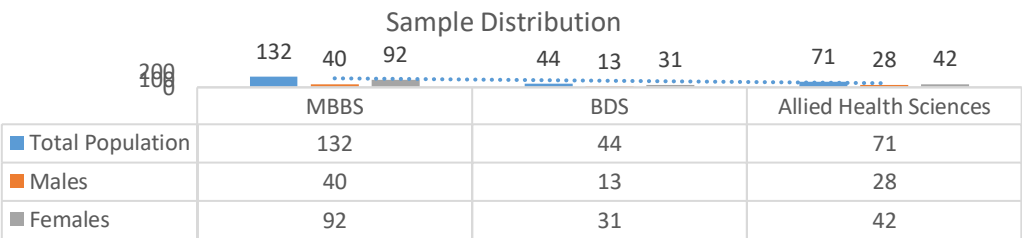
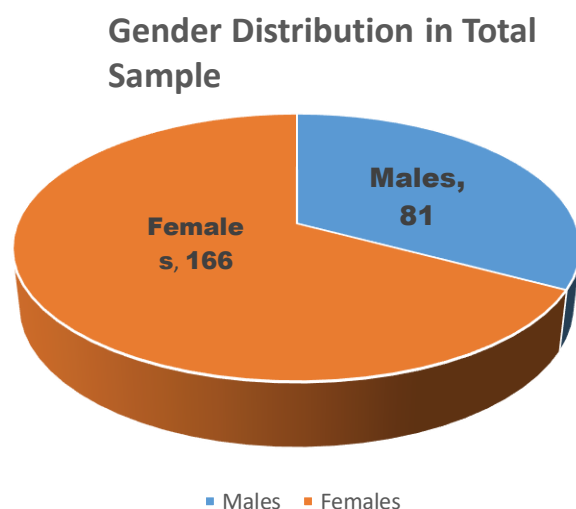


Figure 2. Percentage of Male and Female students in total sample



The study used six standardized instruments to evaluate different mental health issues. The PHQ-9 assesses the severity of depression with excellent criterion validity (0.94) and reliability (Cronbach's $\alpha = 0.92$). The PHQ-15 has good validity (0.78) and reliability ($\alpha = 0.80$) when measuring somatic symptoms. The GAD-7 screens for general anxiety disorder with great internal consistency ($\alpha = 0.92$) and good convergent validity. The OCI-R measures OCD symptoms and has good validity (0.98) and strong reliability ($\alpha = 0.81$). The validity (0.92) and reliability ($\alpha = 0.87-0.94$) of the SPIN measure social anxiety. The validity and reliability of the severity measures for specific phobia and panic disorder ($\alpha = 0.85-0.92$; $0.86-0.95$) are established, and the DAST-10 has a high sensitivity (0.98) and specificity (0.91) for assessing drug usage.

Before conducting the main study, a pilot study was conducted on a sample of 10 students to assess the feasibility and understandability of the items in the questionnaire, as well as the total time taken by the participants to complete the questionnaires.

Results

The total number of students approached was 350, out of which 300 people gave consent to participate in the study, resulting in a response rate of 85.7%. It took 2 months from August 2024 to September 2024 to complete the data collection. Data was collected from 300 participants, out of which 35 questionnaires that were incomplete and not filled seriously were discarded. 18 questionnaires that were found to be outliers during analysis were discarded, and 247 questionnaires were retained for the final analysis.

The results of reliability analysis indicated that the measures used in the study were consistent and valid for assessing mental health disorders. Following this, the examination of prevalence rates revealed significant findings, with notable comorbidities identified among the disorders. Regression analysis was conducted to determine the predictors and correlates of these prevalent mental diseases, highlighting key factors associated with mental health issues in the student population particularly in female students. Additionally, a t-test was performed to compare gender differences in the occurrence of mental health disorders, revealing significant disparities that underscore the impact of gender on mental health outcomes. These findings emphasize the need for targeted interventions and support systems within educational settings for female students.

Participant rates for the following prevalent mental diseases were estimated by the study: 58.9% for somatic symptom disorder, 39.9% for depression, 22.3% for generalized anxiety disorder, and 48% for obsessive compulsive disorder. The two most common disorders were obsessive compulsive disorder and somatic symptom disorder (Table 1).

Table 1. Prevalence of Mental health disorders among student population of a private sector

Common Mental Disorder	With Common Mental Disorder	
	N	%
Depression (Items 1-9)	98	39.9
SSD (Items 1-14)	145	58.9
GAD (items 1-8)	55	22.3
Panic Disorder (items 1-10)	64	26
SAD (items 1-17)	101	40.9
SPD (items 1-10)	110	44.5
OCD (items 1-18)	118	48
SUD (items 1-10)	10	4.1

Note: OCD= obsessive-compulsive disorder, GAD= generalized anxiety disorder, SSD= somatic symptom disorder, SAD= social anxiety disorder, SPD= specific phobia disorder, SUD= substance use disorder.

The regression analysis results indicated a significant positive predictive relationship

between gender and depression, generalized anxiety disorder, specific phobia, OCD, somatic symptom disorder, and substance use disorder. However, no significant predictive relationship was found between gender and panic disorder (Table 2).

Table 2. Multiple regression analyzing the impact of gender on the prediction of Mental health disorders among students of private sector

Variables	Males		Females	
	M	SD	M	SD
PHQ-9	8.35	5.18	8.91	5.01
PHQ-15	6.28	4.82	8.1	4.76
GAD-7	5.68	4.47	6.9	4.85
SMPDA	6.5	6.26	6.71	6.37
SPIN	17.21	11.94	19.46	12.52
SMPSA	8.71	7.93	10.34	8.61
OCI-R	20.28	11.64	23.48	13.49
DAST-10	.89	1.78	.44	1.11
SPQ	8.71	7.93	10.34	8.61

Note: M= Mean, SD= Standard deviation

The table 2 above demonstrates significant differences between males and females across all disorders. Specifically, there is a notable difference in the PHQ-9 with males (M= 8.35, SD= 5.18) scoring lower than females (M= 8.91, SD= 5.01) and SPQ total scores, with males (M=8.71, SD=7.93) scoring lower than females (M=10.34, SD=8.61). Additionally, there

is a significant difference in the OCI-R total scores, where males (M=20.28, SD=11.64) have lower scores compared to females (M=23.48, SD=13.49). A significant difference is also observed in the DAST total scores, with males (M=0.89, SD=1.78) scoring higher than females (M=0.44, SD=1.11) (Table 3). The results revealed a significant difference

only in somatic symptoms (PHQ-15), with females reporting higher scores than males ($t = -2.25$, $p = 0.025$). No significant differences were observed for depression severity (PHQ-9), generalized anxiety disorder (GAD-7), social and mental health issues (SMPDA), social phobia (SPIN),

obsessive-compulsive disorder (OCI-R), or specific phobia (SPQ), as the p-values for these measures were all greater than 0.05, indicating no meaningful gender-based differences. The DAST-10 for substance uses also showed no significant gender differences ($t = 1.43$, $p = 0.15$).

Table 3. Independent sample t-test shows gender differences on DQ total, SSQ total, GAD total, PANIC total, SAQ total, SPQ total, OCIR total, PCL total, DAST total

Note: B= unstandardized Co-efficient, β = Standardized co-efficient, CI= Confidence interval

Table 4. shows comorbid conditions associated with mental health disorders among private

Disorder	B	β	95% CI
Depression	1.43	.05**	[.30 - .2.1]
Generalized Anxiety Disorder	1.11	.11***	[.70 - 1.52]
Somatic Symptom Disorder	1.78	.18***	[1.36 - 2.19]
Panic Disorder	.21	.01	[-.33 - .75]
Specific Phobia	1.62	0.9***	[.89, 2.3]
Obsessive Compulsive Disorder	1.40	.05**	[.32, 2.4]
Substance Use Disorder	-.41	.14***	[-.55, -.27]

sector medical students

Table 4: Comorbidities among mental health disorders among private sector medical students

Primary Condition	Comorbidity	N (%)
Depression	Somatic Symptom Disorder	182 (73.8%)
	OCD	148 (60%)
	Specific Phobia	136 (55.2%)
	Social Anxiety Disorder	135 (54.6%)
	GAD	95 (38.6%)
	Panic Disorder	90 (36.6%)
	Substance Use	12 (5%)
GAD	Somatic Symptom Disorder	207 (84%)
	Depression	170 (69%)
	OCD	160 (65%)
	Specific Phobia	151 (61%)
	Social Anxiety Disorder	136 (55%)
	Panic Disorder	101 (41%)
	Substance Use	12 (5%)
Somatic Symptom Disorder	GAD	169 (68.3%)
	OCD	135 (54.6%)
	Specific Phobia	130 (52.8%)
	Depression	123 (50%)
	Social Anxiety Disorder	116 (46.9%)
	Panic Disorder	81 (32.8%)
	Substance Use	11 (4.5%)
Panic Disorder	Somatic Symptom Disorder	173 (70.4%)

	OCD	169 (68.4%)
	Specific Phobia	165 (66.9%)
	Depression	138 (56.1%)
	Social Anxiety Disorder	137 (55.7%)
	GAD	87 (35.3%)
	Substance Use	18 (7.4%)
Specific Phobia	OCD	168 (68%)
	Somatic Symptom Disorder	145 (58.7%)
	Social Anxiety Disorder	133 (54%)
	Depression	131 (53.2%)
	GAD	74 (30%)
	Substance Use	12 (4.8%)
Social Anxiety Disorder	OCD	168 (68%)
	Somatic Symptom Disorder	167 (67.5%)
	Specific Phobia	145 (58.7%)
	Depression	131 (53.2%)
	Panic Disorder	87 (35%)
	GAD	74 (30%)
	Substance Use	12 (4.8%)
OCD	Somatic Symptom Disorder	180 (72.7%)
	Specific Phobia	167 (67.6%)
	Social Anxiety Disorder	162 (65.4%)
	Depression	159 (64.4%)
	Panic Disorder	119 (48%)
	GAD	105 (42.5%)
	Substance Use	85 (34.6%)
Substance Use	Somatic Symptom Disorder	74 (71.1%)
	OCD	69 (66.3%)
	Specific Phobia	69 (66.3%)
	Depression	61 (58.6%)
	Social Anxiety Disorder	60 (57.7%)
	Panic Disorder	59 (56.7%)
	GAD	42 (40.4%)

Note: OCD= Obsessive-Compulsive Disorder, GAD= Generalized Anxiety Disorder

Correlational Analysis

Significant relationships between the various measures are shown in Table. PHQ-9 has a positive correlation with PHQ-15, GAD-7, SMPDA, SPIN, SMSPA, OCI-R, DAST-10 and gender.

PHQ-15 exhibits comparable favorable associations with gender. GAD-7 and SMPDA have favorable correlations PHQ scores. SPIN and OCIR display extensive positive associations. DAST-10 has a negative correlation with gender (Table 5).

Table 5. showing Zero Order Pearson's Product Moment Correlations between study variables including socio-demographic variables with Means and Standard deviations

Variables	1	2	3	4	5	6	7	8	9	10	M	SD
Age	1										21.04	2.12
Gender	- .12**	1									1.56	.49
PHQ9	.01	.05*	1								8.66	5.09
PHQ15	.01	.18**	.42**	1							7.28	4.86
GAD7	- .07**	.12**	.49**	.46**	1						6.36	4.72
SMPDA	-.00	.01	.32**	.38**	.43**	1					6.61	6.26
SPIN	- .09**	.08**	.26**	.21**	.32**	.27**	1				18.43	12.31
SMSPA	-.02	.09**	.26**	.29**	.27**	.30**	.30**	1			9.62	8.35

OCIR	-.05*	.05*	.29**	.24**	.33**	.31**	.44**	.35**	1		21.03	12.21
DAST	.02	- .15**	.04*	.00	.02	.07**	.00	.05*	.06**	1	.63	1.44

Note: * $p < .05$, ** $p < .01$, PHQ-9= patient health questionnaire-9, PHQ-15= patient health questionnaire-15, GAD-7= generalized anxiety disorder-7, SMPD= severity measure for panic disorder-adult, SPIN= social phobia inventory, SMSP= severity measure for specific phobia-adult. OCI-R= obsessive-compulsive inventory—revised, DAST-10= drug abuse screening tool-10

DISCUSSION

In this study we investigated the prevalence of common mental health disorders among students at the private sector medical college and university including 247 participants. Various assessments, including the PHQ-9, PHQ-15, GAD-7, SMPDA, SPIN, SMSPA, OCI-R, and DAST-10, were employed to estimate the prevalence rates of several disorders: depressive disorder, somatic symptom disorder, generalized anxiety disorder (GAD), social anxiety disorder, specific phobia disorder, panic disorder, and substance use disorder.

The prevalence of depressive disorder, as measured by the PHQ-9, was found to be 39.9%. This finding aligns with studies conducted in different contexts, such as Jiang et al. who reported a prevalence of 30.39% among college students in China⁹, and Yusof Ns in 2020, who found approximately 30% of Malaysian students experienced depression.¹⁰ The current study's results are also consistent with Geiger S, who noted a prevalence of 23.8% in female university students in 2023.¹¹ Depression showed significant positive correlations with somatic symptom disorders, GAD, phobic disorders, OCD, substance use disorder, panic disorder, and social anxiety disorder. These findings echo those of Siddhant and Vilaplana (2023, 2021) where depression was reported at 23.6% for males and 76.4% for females.¹²⁻¹³ The risk of depression was

notably higher among second-year students compared to first-year students, consistent with study of Miglioretti in 2024.¹⁴

A noteworthy finding was the high comorbidity between depression and somatic symptom disorder, OCD, specific phobia, and social anxiety disorder. Consistent with previous literature, the current study found that depression and anxiety often coexist, with a significant proportion of female individuals with depression also experiencing anxiety symptoms.¹⁵⁻¹⁷ Somatic symptoms are particularly prevalent in major depression, with Chemagosi (2024) noting that they manifest in a significant majority of depressed patients.¹⁸ The point prevalence of somatic symptom disorder in this study was reported at 58.9%, markedly higher than the 14.3% found in previous research.¹⁹ This discrepancy may be attributed to the larger sample size in the present study compared to the smaller sample in the previous research. Cultural factors may also play a role, as anxiety disorders are often expressed through somatic symptoms in Eastern cultures, leading to higher reported rates of somatic symptom disorder. Generalized anxiety disorder had a point prevalence of 22.3%, contrasting with the DSM-5's reported 12-month prevalence rates of 0.9% among adolescents in the U.S. and 0.4% to 3.6% in other countries. This disparity could be due to cultural differences or sample size variations.²⁰ GAD was significantly correlated with gender, consistent with findings that females are more likely to experience this disorder.²¹

The prevalence of panic disorder was found to be aligning with Kay-Lambkin study published in 2023, Panic disorder showed high comorbidity with other disorders, particularly OCD, which the current study found to be 68.4% comorbid with panic disorder.²² This aligns with

previous literature highlighting the frequent co-occurrence of panic disorder and other anxiety disorders.²³

Social anxiety disorder prevalence was 40.9%, which is lower than the 59.5% reported in a study of medical students.²⁴ This difference may be attributed to the broader range of students included in the present study. In our study Specific phobia was reported at 44.5%, which correlates with findings from other studies but may vary due to the specific fears assessed. Significant relationships with gender were noted, as phobias tend to be more prevalent among females.²⁵ The overall prevalence of substance use disorder was 4.1%, consistent with findings from Noorullah A (2024), who reported a prevalence of substance use disorder showed a significant negative relationship with several factors, including gender.²⁶⁻²⁸ High comorbidity was noted between substance use disorder and other health disorders, emphasizing the need for integrated treatment approaches. The findings of this study highlight the significant prevalence of various mood and anxiety disorders among female university students, emphasizing the necessity for early detection, targeted interventions, and resource allocation within university settings to address these pressing issues.

Limitations: A wider range of phobias related to mental health were not examined, which is the main limitation of this study. This study focused on a limited set of fears specifically related to academic performance, but a broader assessment could have yielded more comprehensive insights.

CONCLUSION

In conclusion, Mental health disorders are highly prevalent among female university students, often emerging during their university years and significantly impacting academic performance. Early recognition and effective treatment of these mental health issues can reduce harassment rates and enhance both educational and psychosocial functioning. Further research

is essential to explore the underlying causes of these disorders and to develop targeted interventions for managing their symptoms.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

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AUTHORS' CONTRIBUTIONS:

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared

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